

A New Chapter, A New Horizon CAiRS新篇章，加促實踐創科藍圖

Interview with
Prof. Kenneth K. M. Lam,
CEO and Centre Director of CAiRS

與CAiRS的現任行政總裁及總監
林健文教授交談



CAiRS Presence
at InnoEx 2024

CAiRS在香港國際創科展 2024



CAiRS at the International
Exhibition of Inventions Geneva
2024

CAiRS 亮相於
2024年日內瓦國際發明展



Activities Highlights –
Visits, the Team at CAiRS, and Updates.

活動亮點 –
參觀交流，工作團隊，和更新資訊。





Interview with Prof. Kenneth K. M. Lam — CEO and Centre Director of CAiRS 與CAiRS的現任行政總裁及總監林健文教授交談

Prof. Lam was installed as the new CEO and Centre Director of CAiRS in October 2023. In this issue of the Newsletter, Prof. Lam shares some of his thoughts and perspectives on CAiRS and its future.

林健文教授於2023年10月就任CAiRS新任行政總裁及總監。在本期通訊中，林教授分享了他對CAiRS及其未來的一些想法和看法。

What is the key strength that CAiRS is doing well now? CAiRS目前做得好的關鍵優勢是什麼？

CAiRS is now at just over three and a half years of operations. Our work has led to the publication of over 60 reputable research and journal articles. We have also confirmed 18 patents to date, which rightly demonstrates the quality of our technical expertise collectively as a team.

CAiRS has over 40 industrial collaborators, which highlights the relevance of our outputs in the contributions to ensure a safe smart city at work. We have been able to demonstrate that our technological solutions are scalable, and that we can offer innovative, systematic safety and reliability solutions, for all applications big and small.

CAiRS目前已進入營運第三年半。我們的工作已發表60多篇有信譽的研究和期刊文章。迄今為止，我們還擁有了18項專利，這些充分證明了我們團隊的高品質技術專業和知識。

CAiRS擁有40多家工商合作性聯繫，凸顯了我們在確保安全智慧城市工作方面的貢獻及其相關性成果。我們已經能夠證明我們的技術解決方案是可擴展的，並且我們可以為所有大大小小的應用提供創新、系統化的安全性和可靠性解決方案。

What would you highlight as crucial strategic concerns for CAiRS for the next three to five years? 您認為 CAiRS 未來三到五年的關鍵策略問題是什麼？

All the work that has been undertaken so far has helped CAiRS to firmly establish the scope of technologies that we are able to provide and apply. The next step of our development is to a) continue to grow our technologies, and b) bring forth our portfolio in broad and sustainable commercial utilization.

We need to raise further awareness and demonstrate our relevance by engaging with new sectors and/or collaborators. Our current workflow will gradually evolve to become a viable business model of operations. In time, we also look forward to providing a sense of community for those we serve and aim to serve.

到現在為止CAiRS所做的工作都牢固地確定了我們能夠提供和應用的技術範圍。我們下一步的發展是a) 繼續發展我們的技術，b) 在廣泛和可持續的商業用途中推出我們各種的產品組合。

我們需要透過與新領域和/或合作者聯繫來進一步提高其他人對我們的認識並展示我們的相關性。我們目前的工作流程將逐漸發展成可行的商業營運模式。隨著時間的推移，我們也期待能夠為我們所服務和旨在服務的人們提供一個共融空間。

Interview with Prof. Kenneth K. M. LAM — CEO and Centre Director of CAiRS
與CAiRS的現任行政總裁及總監林健文教授交談

What are your priorities in this first year of being CEO and Centre Director of CAiRS? 您擔任 CAiRS 行政總裁及總監第一年的首要任務是什麼？

CAiRS has just returned from its first foray into the international stage of innovation and inventions through the participation of the 49th International Exhibition of Inventions Geneva. We have been able to showcase our technologies to a global audience and achieved recognition for our efforts. You will find further information from the rest of this Newsletter.

I look forward to the further promotion of our services and strengths to the public in Hong Kong and beyond. I look forward to building strategic and sustainable relationships with our professional, social, and charitable engagements in the future to come.

CAiRS剛透過參加第49屆日內瓦國際發明展，首次涉足國際創新與發明舞台。我們已經能夠向全球觀眾展示我們的技術並獲得對我們努力的認可。您可以從本通訊的其餘部分找到更多資訊。我期待向香港及其他地區的公眾進一步推廣我們的服務和優勢。我期待能夠在我們的專業、社會和慈善活動建立策略性和可持續的關係。

What does it mean to you that CAiRS is diverse in both the work and the people? CAiRS 在工作和人員方面都具有多樣性，這對您意味著什麼？

As with any good AI methodology, diversity is crucial in the construction of a good and reliable model in application. This rich diversity can only come from the various backgrounds, knowledge, know-hows, and experience of the people within CAiRS. CAiRS immensely values the diversity of the team. This diversity gives strength to our empathy, which is evident in all aspects of our operations and will only continue to grow and to be beneficial for CAiRS.

就如任何好的人工智能方法一樣，多樣性對於建立良好且可靠的應用模型至關重要。這種豐富的多樣性只能來自CAiRS內部人員的不同背景、知識、技能和經驗。CAiRS 非常重視團隊的多元性。這種多樣性增強了我們的同理心，這在我們營運的各個方面都很明顯，並且只會繼續增長，繼續對CAiRS 有利。

What is the value of CAiRS, as an innovative research enterprise with safety and reliability at the heart of its operations, in Hong Kong and beyond?

作為一家以安全性和可靠性為營運核心的創新科研企業，CAiRS 在香港及其他地區的價值是什麼？

Matters of safety and reliability are issues that transcend geographical locations, economic priorities, and social strata. For now, CAiRS is a place to look for innovative safety and reliability solutions, for the improvement of product safety and system reliability across various industrial and commercial applications. However, I hope that CAiRS will also serve as a local, regional, and international platform, where new and impactful safety and reliability ethos can also be explored.

安全和可靠性問題不只是地理位置、經濟考慮因素和社會階層的問題。目前，CAiRS是一個能夠尋找創新安全和可靠性解決方案的地方，以提高各種工業和商業應用的產品安全性和系統可靠性。然而，我希望CAiRS也能成為一個本地、區域和國際平台，在這裡也可以探索新的、有影響力的安全性和可靠性思維。

CAiRS at InnoEx 2024 CAiRS在香港國際創科展 2024

We were honoured to attend the InnoEx 2024, jointly organized by the Innovation, Technology and Industry Bureau of the Hong Kong SAR Government (ITIB, HKSARG) and the Hong Kong Trade Development Council (HKTDC) at the Hong Kong Convention and Exhibition Centre in Wan Chai from 13th to 16th April 2024. This is the second year of us in attendance of this event, in which we had the opportunity to showcase our innovative technologies and AI methodologies in reliability and safety solutions. There were audience and interests in our work from diverse backgrounds, and from all applications big and small. Thank you for keeping us busy during the event.

We will be following up with these interests in the near future and we look forward to exploring new possibilities with our audience.

我們很榮幸參加由香港特別行政區政府創新科技及工業局和香港貿易發展局於2024年4月13日至16日在灣仔香港會議展覽中心舉辦的香港國際創科展2024。這是我們第二年參加活動，我們有機會展示我們在可靠性和安全解決方案方面的創新技術和人工智能方法。有來自不同背景的觀眾對我們的工作，大大小小的應用程式感興趣。感謝您們在活動期間讓我們忙碌中渡過。

我們會繼續積極為業界提供多項可應對方案，並期待與您們一起探索新的合作關係。



CAiRS at the 49th International Exhibition of Inventions Geneva 2024 CAiRS 亮相於2024年第49屆日內瓦國際發明展

We are pleased to announce that we successfully participated in the International Exhibition of Inventions Geneva 2024 as an exhibitor for the first time. The Hong Kong Polytechnic University won a total of 45 awards, of which PolyU's three InnoHK R&D Centres (@InnoHK) won a total of 19 awards. Among these 19 awards, CAiRS has 12, 1 gold with Prize of the International Federation of Inventors' Association (IFIA), 2 gold, 4 silver and 4 bronze awards respectively for all of our 11 entries. This is the first time that we participated in such a large-scale event on the international stage. We are grateful that our bespoke R&D endeavours in innovative technologies on reliability and safety matters can be warmly welcomed by the international inventions' community in this prestigious event.

We are proud of our team's efforts and achievements at the Exhibition. These achievements rely on the dedication and hard work of our team. Sophisticated technologies are used by CAiRS to improve the reliability and safety of products and systems and predict remaining useful lives, by applying different artificial intelligence models and testing techniques. Although CAiRS has only been in operation for just over three and a half years, the honour of receiving the awards is a global recognition of our contribution in the world of innovation.

We would like to thank the team at CAiRS and the researchers for their technical expertise and enthusiasm in their work. We would also like to thank our collaborative partners, institutions, and supporting organizations for giving us the opportunities to apply our work in real-time and practical deployment. We look forward to sharing more of our work with our audience, on stages here and far, wherever in the world we may be in the future.



我們首次以參展者身分參加了2024年日內瓦國際發明展。香港理工大學總共奪得45個獎項，其中理大的三家創新香港研發中心(@InnoHK)合共獲得之中19個獎項。在這19個獎項中，CAiRS的11個參賽項目共囊括12個獎項、分別是1個金獎及國際發明聯盟協會獎(IFIA)、2個金獎、4個銀獎和4個銅獎。這是我們第一次在國際舞台上參加如此大規模的活動。我們很高興我們在可靠性和安全性創新技術方面的研發工作能夠在這項享有盛譽的活動中受到了國際發明界的熱烈歡迎。

我們對我們團隊在展會上的努力和成就感到自豪。這些成就有賴於我們團隊的投入和努力。CAiRS使用先進的技術，透過應用不同的人工智慧模型和測試技術來提高產品和系統的可靠性和安全性，並預測剩餘使用壽命。儘管CAiRS僅僅營運了三年半多，但獲得這些獎項的榮譽是全球對我們在創新領域有所作為的認可。

我們要感謝CAiRS的團隊和研究人員的技術專業知識和他們對工作的熱誠。我們也要感謝我們的合作夥伴、機構和支助組織，他們為我們提供了將我們的工作有實際應用的機會。我們期待未來在世界各地的舞台上與大家分享更多我們的創新研發成果。

CAiRS at the 49th International Exhibition of Inventions Geneva 2024 CAiRS 亮相於2024年第49屆日內瓦國際發明展

Here is the list of our achievements.
以下是我們的獲獎項目的詳情。

Gold Award and Prize of the International Federation of Inventors' Association (IFIA):

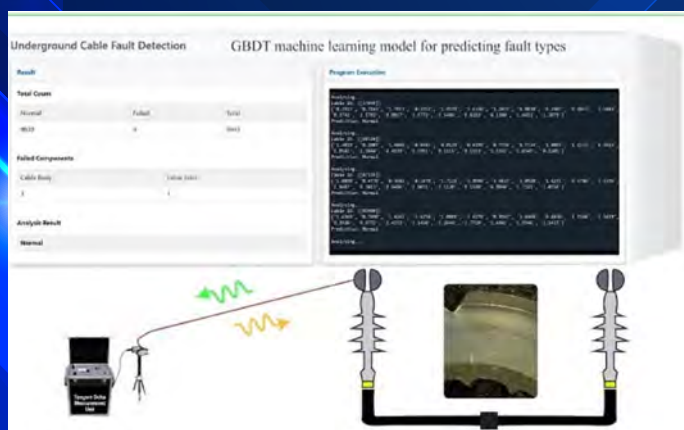
RailSwinX: Enhanced Rail Track Defect Detection Through Cutting Edge AI Technology

金獎及國際發明聯盟協會獎 (IFIA):

RailSwinX：透過尖端人工智慧技術增強鐵軌缺陷偵測

(For further information, please contact Dr. Vincent NG, email: vincent.ng@cairs.hk.)

(如果需要更多資訊，請聯絡Dr. Vincent NG，電郵：vincent.ng@cairs.hk。)



Gold Award

CablePrognosis: AI-Driven Predictive Health Index System and Remaining Useful Life Prediction for Underground Cables

金獎

CablePrognosis：人工智慧驅動的預測健康指數系統和地下電纜剩餘使用壽命預測

(For further information, please contact Mr. Fiske LIN, email: fiske.lin@cairs.hk.)

(如果需要更多資訊，請聯絡Mr. Fiske LIN，電郵：fiske.lin@cairs.hk。)

Gold Award

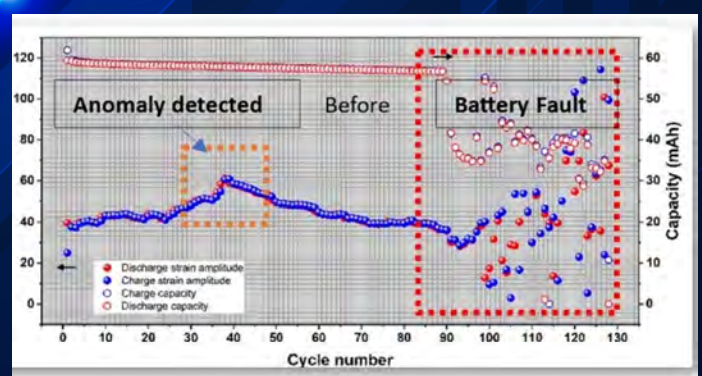
LithioGuardian: Online Lithium-ion Battery Health Monitoring System with FBG Sensors

金獎

LithioGuardian：帶 FBG 傳感器的線上鋰離子電池健康監測系統

(For further information, please contact Mr. Fiske LIN, email: fiske.lin@cairs.hk.)

(如果需要更多資訊，請聯絡Mr. Fiske LIN，電郵：fiske.lin@cairs.hk。)



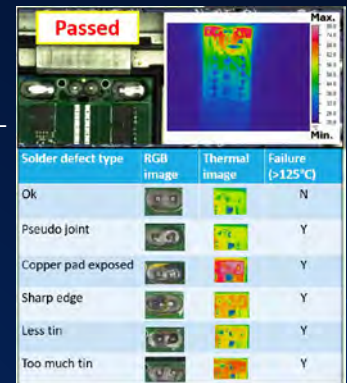
CAIRS at the 49th International Exhibition of Inventions Geneva 2024 CAIRS 亮相於2024年第49屆日內瓦國際發明展

Silver Award

SolderSense: A Novel AI Failure Prediction System for PCB Solder Joints Using Thermal Imaging Analytics

銀獎

SolderSense：使用熱成像分析的新型 PCB 焊點人工智慧故障預測系統
(For further information, please contact Dr. Vincent NG, email: vincent.ng@cairs.hk.)
(如果需要更多資訊，請聯絡Dr. Vincent NG，電郵：vincent.ng@cairs.hk。)



Silver Award

WireInspect: Anomaly Detection System for Elevator Steel Wire Ropes Using Deep Learning Models

銀獎

WireInspect：使用深度學習模型的電梯鋼絲繩異常檢測系統
(For further information, please contact Dr. Rainbow LEE, email: rainbow.lee@cairs.hk.)
(如果需要更多資訊，請聯絡Dr. Rainbow LEE，電郵：rainbow.lee@cairs.hk。)

Silver Award

RoboGuide: Intelligent Collision Avoidance Tracking and Hazardous Object Detection for Robot Temi

銀獎

RoboGuide：機器人 Temi 的智慧防撞預測和危險物體偵測
(For further information, please contact Dr. Tom CHAN, email: tom.chan@cairs.hk.)
(如果需要更多資訊，請聯絡Dr. Tom CHAN，電郵：tom.chan@cairs.hk。)



Silver Award

ClearLens: Cutting-Edge Camera Tampering and Anomaly Detection System for Video Surveillance

銀獎

ClearLens：用於視訊監控的尖端攝影機篡改和異常檢測系統
(For further information, please contact Dr. Tom CHAN, email: tom.chan@cairs.hk.)
(如果需要更多資訊，請聯絡Dr. Tom CHAN，電郵：tom.chan@cairs.hk。)

CAIRS at the 49th International Exhibition of Inventions Geneva 2024 CAIRS 亮相於2024年第49屆日內瓦國際發明展

Bronze Award

VehicleGuardian: AI-Enhanced Online Health Monitoring and Remaining Useful Life Prediction for Vehicle Engine Cooling Systems

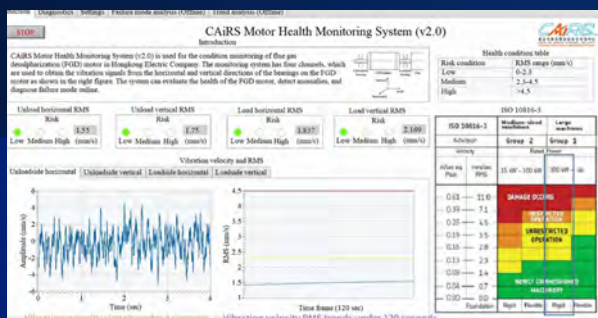
銅獎

VehicleGuardian: 人工智慧增強型車輛引擎冷卻系統線上健康監測和剩餘使用壽命預測

(For further information, please contact Mr. Fiske LIN,

email: fiske.lin@cairs.hk.)

(如果需要更多資訊，請聯絡Mr. Fiske LIN，電郵：fiske.lin@cairs.hk。)



User interface of motor monitor system

Bronze Award

MotorGuard: Automated Motor Health Monitoring and Failure Diagnosis with a Rule-Based Expert Inference System

銅獎

MotorGuard: 利用基於規則的專家推理系統進行自動電機健康監測和故障診斷

(For further information, please contact Dr. Rainbow LEE, email: rainbow.lee@cairs.hk.)

(如果需要更多資訊，請聯絡Dr. Rainbow LEE，電郵：rainbow.lee@cairs.hk。)

Bronze Award

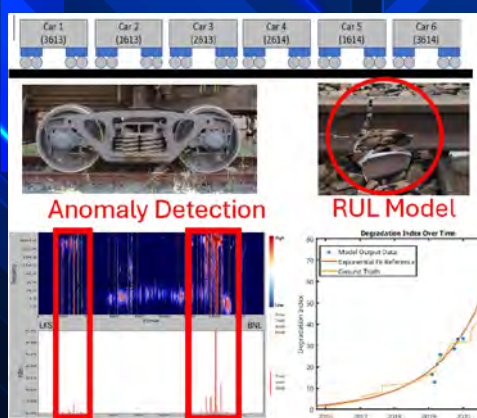
ManufacturoVision: Real-Time Defect Detection and Classification System Using Deep Learning for Multi-Material Components

銅獎

ManufacturoVision: 用於混合材料產品組件缺陷的實時檢測和分類系統

(For further information, please contact Dr. Jenny HUANG, email: jenny.huang@cairs.hk.)

(如果需要更多資訊，請聯絡Dr. Jenny HUANG，電郵：jenny.huang@cairs.hk。)



Bronze Award

RailScan: AI Rail Anomaly Detection and Remaining Useful Life Modeling

銅獎

RailScan: AI 軌道異常偵測與剩餘使用壽命建模(For further information, please contact Dr. Tom CHAN, email: tom.chan@cairs.hk.)

(如果需要更多資訊，請聯絡Dr. Tom CHAN，電郵：tom.chan@cairs.hk。)

Feedback and Support — Reported in Media 媒體報道

We are pleased to have our work with one of the collaborators, HK Electric, reported in the local media at the end of last year.

我們很高興去年年底我們與合作夥伴之一港燈的合作得到了本地媒體的報道。

智慧城市 | 港燈藉AI及大數據監察電網 電纜異常事件激減4成(摘自星島日報(A8)及星島頭條網 Online News, 27/12/2023)



“...港燈去年與香港理工大學創立的產品可靠性暨系統安全研發中心（CAIRS）合作，開發一款AI人工智能軟件，新模型結合港燈過往10多年的檢測大數據，可預測是電纜線身或是接駁箱出現異常的風險較大。”

“...港燈今年初試行 AI 模型，能量化電纜各部件異常機率，為一條電纜不同位置分別評分，可大幅提升檢查電纜的準確度及效率。現時精準度達7成，相信未來有更多數據投入作分析，可以更快更準，守護城市血管的健康。”



We attended a local press event/media reception held at the Hong Kong Polytechnic University to honour the awardees and to showcase the outstanding award-winning innovations from the 49th International Exhibition of Inventions Geneva.

我們出席了在香港理工大學舉行的本地新聞發布會/媒體招待會，以表彰獲獎者並展示在第49屆日內瓦國際發明展的傑出獲獎創新成果



Group photo of awardees with Ir Prof. Christopher Chao, VPRI, PolyU (middle)
得獎者與香港理工大學趙汝恒教授副校長（研究及創新）合照（中）



Prof. Lam with the display of our awarded entry, RailSwinX, for which he is also the Principal Investigator.
林教授展示我們的獲獎項目 RailSwinX，他也是該項目的首席研究員。

Visits at CAiRS CAiRS的訪客

At CAiRS, we continue to receive guests and visitors from various backgrounds. We always welcome visitors who are keen to get to know us more, be they new or continued interests.

在CAiRS，我們繼續接待來自不同背景的訪客拜訪。我們非常歡迎接待希望進一步了解我們的訪客，無論他們是新的訪客還是繼續之前的交流。



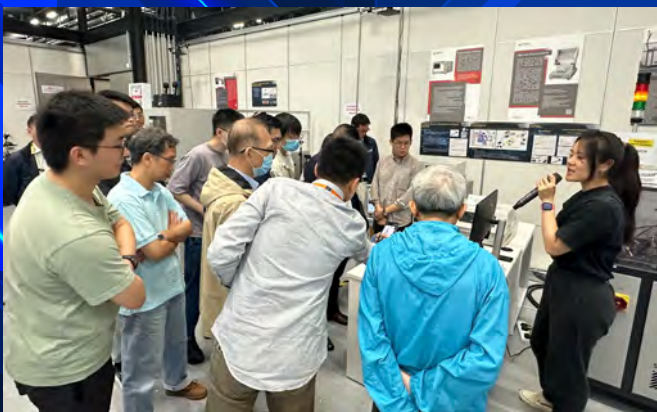
Jan to Mar 2024 — Dongguan Municipal Government delegation visits.

2024年1月至3月－東莞市政府代表團來訪。



Jan 2024 — Würth Elektronik delegation visits.

2024年1月－伍爾特電子代表團來訪。



Mar 2024 — IET Hong Kong (Power and Energy Section) delegation visit.

2024年3月－工程及科技學會香港分會(電力及能源部)代表團來訪。

Visits at CAiRS CAiRS的訪客

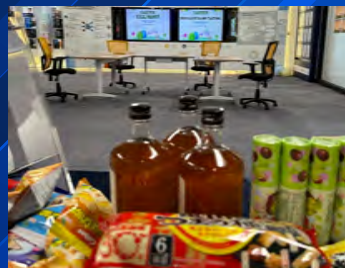


Mar 2024 – CUHK, CSE students' group visit.
2024年3月 – 香港中文大學計算機科學與工程學系學生團體到訪。

The Team at CAiRS CAiRS 團隊亮點

The team at CAiRS is our most valued asset and their contributions are critical to our success. We value teamwork and we organize various sociable activities regularly, where the team can enjoy each other's company aside from our busy work schedules.

CAiRS的團隊是我們最寶貴的資產，他們的貢獻對我們的成功至關重要。我們重視團隊合作，定期舉辦各種社交活動，讓團隊能夠在繁忙的工作之餘也有友善交流的機會。



CAiRS Easter Special – Chocolate Blind Tasting and Easter Egg Hunt at the Office.
CAiRS復活節特別活動 – 在辦公室進行巧克力盲試品嚐和尋找復活節彩蛋。



Weekend Special – Seafood Lunch at Lamma Island and Hiking.
CAiRS 週末特別活動 – 南丫島海鮮午餐和健行。

Useful Contact Information

Office Address:	Unit 1212-1213, 12/F, Building 19W, Hong Kong Science Park, Pak Shek Kok, New Territories, Hong Kong
Phone Number:	(+852) 2162 5161
Website:	https://www.cairs.hk/



Our Laboratories

Lab 1:
Room ABC, Unit G02-03, G/F, Building 16W,
Hong Kong Science Park

Lab 2:
RCC R12, Unit LB-0101, 1/F, Building 19W,
Hong Kong Science Park



Find us at LinkedIn:

<https://www.linkedin.com/company/cairshk/>



Find us at Facebook:

<https://www.facebook.com/CAIRSHongKong>

